



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 2
290 BROADWAY
NEW YORK, NY 10007-1866

March 31, 2016

Thomas J. Ebbert
Manager, Remediation
PPG Industries, Inc.
4325 Rosanna Drive
Allison Park, PA 15101

Re: Riverside Industrial Park Superfund Site, Newark, New Jersey: Administrative Settlement Agreement and Order on Consent For Remedial Investigation and Feasibility Study - CERCLA Docket No. 02-2014-2011

Dear Mr. Ebbert:

The U.S. Environmental Protection Agency (EPA) has reviewed PPG Industries, Inc.'s (PPG) submittal entitled the "Remedial Investigation and Feasibility Study Work Plan, Riverside Industrial Park Superfund Site, Newark, New Jersey, August 28, 2015" (RI/FS WP). Pursuant to Paragraph 41 of the Administrative Settlement Agreement and Order on Consent for Remedial Investigation and Feasibility Study, attached are EPA's comments on the RI/FS WP. EPA expects a step-wise approach towards achievement of an approvable RI/FS WP. PPG should contact EPA within one week to set up an initial call. If needed, PPG should then request a follow-up meeting within the next month. PPG should also submit to EPA for approval a schedule for submittal of modifications once comments are verbally resolved. Modifications to the RI/FS WP should be provided in redline strikeout format electronically, until requested otherwise from EPA.

We appreciate your cooperation and we look forward to continuing to work in this cooperative manner. If you have any questions, feel free to contact me at 212-637-4396.

Sincerely yours,

A handwritten signature in black ink, appearing to read "Elizabeth Butler", is written over a horizontal line.

Elizabeth Butler
Remedial Project Manager
Emergency and Remedial Response Division

Enclosures

cc: M. Sivak, EPA
W. Reilly, EPA

Comment No.	Page and Section Reference	Comment	Response
1	General	Please add bookmarks (for each item listed in the table of contents) to future PDF document submittals to facilitate navigation of large documents such as the Remedial Investigation/Feasibility Study (RI/FS) Work Plan (WP) and Quality Assurance Project Plan (QAPP).	
2	WP General	Has an effort been made to communicate with the respective Licensed Site Remediation Professionals and/or NJDEP Case Managers for the lots that did work under those programs? Additional data may be available that could be of interest to RI/FS planning.	
3	WP General	<p>(a) Please prepare a figure that shows both the property lot numbers and the building number designations on the same sheet along with an identification of active buildings versus vacant buildings. In addition, it would be useful to put together a cross-walk linking lots, buildings, current state (active or inactive), tanks present, etc.</p> <p>(b) Please superimpose the historic Passaic River shoreline (e.g., from the 1892 Sanborn Map) on at least one site figure to assist with preliminary evaluation of the extent of historical fill in the subsurface.</p>	
4	WP General	It would be beneficial to have an individual figure for each Lot that shows each sample location and type that will be collected as part of the work plan and any historic samples that could be included in the remedial investigation and risk assessments.	
5	QAPP & WP General	QAPP Worksheet (WS) 11 references a "Laboratory QAPP Addendum", which will include updated worksheets and appendices. Please add this deliverable to the Project Schedule provided as Figure 8 to the WP. Please include a reference to Figure 8 in QAPP WS 16.	
6	WP Section 1.2.1 (page 1-1)	The third bullet should be re-written as follows: "develop preliminary remediation goals (PRGs) to address unacceptable risks and/or hazards identified by the risk assessments." This is important as the PRGs guide the next step, which is the feasibility study.	
7	WP Section 1.2.2 (pages 1-1 and 1-2)	FS objectives must reflect the purpose of the FS, as stated within EPA CERCLA guidance (see website below). First, the purpose of the FS is the development, evaluation and detailed screening of remedial action alternatives considered appropriate for a particular site, to abate unacceptable risks posed by site contamination. Consideration of existing (and potentially additional) institutional and engineering controls is typically part of this process, but not the sole focus. Second, an important tenant of CERCLA is preference for permanent remedial actions, to the extent possible. EPA Superfund guidance should be accessed to guide development of this RI/FS; resources are found at: http://www.epa.gov/superfund/superfund-remedial-investigationfeasibility-study-site-characterization .	
8	WP Section 2.3 (page 2-2)	This section must be expanded to either list directly, or reference to an easily accessible appendix, the primary chemicals used, stored and/or produced by each facility, including the primary waste streams and approximate volumes of same. This information is needed to help identify the primary contaminants of concern relative to different parts of the site. This must be expanded to include PPG and predecessor companies (paint, varnish and related operations (~1909 - 1971) that utilized the site, and post 1971.	
9	WP Section 2.4 (page 2-2)	The first paragraph should refer readers to a table listing the main chemical constituents (organics and inorganics) for the paint, resins and varnishes manufactured on site, along with location and types of energy sources used for site operations (coal, coal gas, petroleum products).	
10	WP Section 2.4 (pages 2-2 and 2-3)	This and other sections of the WP (including various Lot descriptions under Section 4.2) indicate that concentrations of contaminants in various media were compared to industrial Regional Screening Levels to determine if further evaluation of these chemicals in the Remedial Investigation was needed. Evaluation of Chemicals of Potential Concern (COPCs) occurs during the risk assessment where chemicals are compared to residential and ecological screening levels. Also, use of the term "Contaminants of interest (COI)" should be replaced with "COPC".	

Comment No.	Page and Section Reference	Comment	Response
11	WP Section 2.4 (page 2-3)	<p>(a) In the first paragraph, the 1969 explosion and fire description must be expanded to identify the contents of the process tanks that failed and their locations on site (provide figure illustrating this). Based on site conditions at the time of this incident, the likely contaminant migration pathways of released materials must be described.</p> <p>(b) In the second paragraph, the text mentions 11 documented spills at the Site. More information on these spills is needed for sampling design. A summary table for this information should be developed and include: date of spill, chemicals involved, location, estimated volume released, response actions taken and subsequent sampling results. Please also provide clarification on who documented these spills.</p> <p>(c) Adding the above revisions along with those in the previous comments on this section is necessary for: improving the Conceptual Site Model, and identifying key contaminants of concern per media, based on the following characteristics: toxicity, prevalence on site, persistence, bio-accumulative potential and mobility.</p>	
12	WP Section 2.4 (page 2-3)	<p>(a) The WP does not provide adequate documentation to support the conclusions drawn about the site’s geological setting. Please provide selected boring logs and well construction records to confirm the stratigraphic descriptions and hydrogeological conclusions.</p> <p>(b) A review was conducted of surficial and bedrock geological maps for the area. Details from the well logs upon which the geologic maps are based do not support the abbreviated, site-specific stratigraphic description that is presented in the WP.</p> <p>(c) Please expand the discussion to note that the site is in a valley-fill aquifer setting. The river aligns with the approximate trough of the filled glacial valley, and the site is just west of that trough. The site is depicted on the geological maps as being underlain immediately by fill, which is underlain by Quaternary alluvium. The sandy-silty-pebbly-gravelly alluvium is reported to be up to 25 feet thick and may contain some organic matter and minor amounts of clay. Underlying this unit are fine- to coarse- sands and pebbles to gravels with some silt (glacial lake deposits mapped in the area). A veneer of dense to very dense Rahway Till may underlie the glacial lake deposits. The till here is comprised of silty sand to sandy-clayey silt.</p> <p>(d) Please expand the discussion to include a description of the bedrock below the site. Bedrock is mapped as a bit deeper than 50 feet bmsl and is the classic Passaic Formation (strikes in the mid-teens to the NE/SW and dips between 6 and about 10 feet W/NW). For a relatively coarse-grained aquifer, despite the potential presence of clay lenses, 50 feet is not very deep with regard to potential impacts from areas of concern.</p> <p>(e) The report states that a clay layer underlays the historical fill. Is it possible that the Passaic River’s sediment bed, which would have been covered by the historical fill placed to reclaim land from the river, was misidentified as a clay unit? The stratigraphic description is notable in that it does not identify a silty stratum immediately beneath the historical fill.</p> <p>(f) The reported clay confining layer needs to be verified for extent, lateral continuity, orientation, thickness, (soil) classification, and screened for evidence of site-related contamination. Given the sites’ histories, more robust characterization of the site-specific geology and hydrogeology is needed to better understand the hydrostratigraphic units and hydrogeologic conditions at the site, in order to support a FS or viable and effective site remedy.</p>	
13	WP Section 3.2 (page 3-1)	<p>(a) The groundwater classification should be identified in the text.</p> <p>(b) Using information from the Site Characterization Summary Report (SCSR), prior findings, such as elevated levels of site contamination, locations, depths and presence of product, must be described; see further comments on Section 4.2 below.</p> <p>(c) To assist with Phase I development, the NJDEP’s Technical Requirements for Site Remediation, N.J.A.C. 7:26E and implementing technical guidance (found at http://www.state.nj.us/dep/srp/guidance/) should be consulted.</p>	

Comment No.	Page and Section Reference	Comment	Response
14	WP Section 3.2 (page 3-1)	The text indicates, without providing supporting information, that soil impacts are mainly attributed to the placement of historic fill on site (in ~1909) and that groundwater impacts are mainly attributed to the presence of “historic fill or recent spills.” This characterization underestimates potential impacts to site media from the long history of heavy industrial activity at this site. Instead, the media potentially impacted by site operations must be identified as: historic fill, the underlying native material below historic fill, groundwater, and the surface water and sediment of the adjacent Passaic River. In addition, all known or suspected chemical discharges to site media (recent and past) must be identified and fully characterized. This means that the extent of contaminant migration from these discharges must be delineated both vertically and horizontally, with consideration of surrounding conditions. Although a portion of observed site contamination may be attributed to historic fill, some of the observed site contamination is likely attributable to chemical discharges on or within the historic fill, given the operating history of this site. The NJDEP’s Historic Fill Material Technical Guidance, April 2013, should be consulted for correct interpretation of site contamination relative to that which is attributable to historic fill. Please refer to: http://www.state.nj.us/dep/srp/guidance/srra/historic_fill_guidance.pdf .	
15	WP Sections 3.2 & 3.4 (pages 3-1 and 3-3)	The CSM does not mention sediment as a media of interest nor does it mention potential exposure of aquatic organisms to river bank sediments. Since there has been transport over time of site soils (and maybe other media such as waste) into the river through aerial deposition and surface water runoff, sediments should be included as a media of interest in the CSM, as well as ecological receptors that could come into contact with the sediment. The NJDEP’s Administrative Guidance, entitled “Investigating Impacts from Contaminated Sites to a Surface Water”, November 2015, should be consulted. Please refer to: http://www.state.nj.us/dep/srp/guidance/srra/inv_impacts_to_surface_water.pdf .	
16	WP Section 3.3 (page 3-1)	Additional information on storm water management is needed, including the date when PVSC began servicing this site and prior to this date, a description of how storm water and industrial waste water were managed and the most likely discharge location(s) to the Passaic River (or other receiving entity).	
17	WP Section 3.3 (Page 3-2)	<p>(a) Please expand the “Subsurface Pipes and Utilities Pathways” to include potential exfiltration of wastes from the basement of Building #7 to adjacent subsurface soils. Please describe the elevation of the building basement with respect to the depth of the historical fill and whether any of the on-site buildings were constructed on piles. Given that large portions of the site were reclaimed from the Passaic River via placement of historical fill (which may have had less than optimal physical properties to support building foundations), piles may have been used and may have penetrated the potential clay confining unit.</p> <p>(b) Any subsurface conveyances (pipes, utilities) should be evaluated for possible selection of targeted sampling. These areas often represent important contaminant discharge and migration pathways.</p>	
18	WP Section 3.3 (page 3-2)	An important focus for this remedial investigation should be the evaluation of groundwater discharge to surface water. This must include investigation of both dissolved phase and any free-phase product. Much of this site was reclaimed from the former Passaic River riverbed in early 1900’s, through land extension using historic fill. Therefore, the existing clay layer underlying fill is likely continuous towards the river and offers little to no barrier for mobile contaminants of site chemical releases (on/within fill) to reaching the river. The NJDEP’s Technical Guidance, entitled “Characterization of Ground Water Discharge to Surface Water”, January 2016, should be consulted for this purpose. Please refer to: http://www.state.nj.us/dep/srp/guidance/srra/gw_discharge_to_sw_tech_guidance.pdf .	

Comment No.	Page and Section Reference	Comment	Response
19	WP Section 3.4 (page 3-2)	<p>(a) Potential receptor pathways should be evaluated in accordance with the Risk Assessment Guidance for Superfund – Part A, which states that risks should be evaluated in the absence of remediation or institutional controls. This and other sections of the WP will need to be revised consistent with guidance.</p> <p>(b) If groundwater is categorized by the state as a class 2A aquifer, it needs to be considered as a potential drinking water source. The text states that site groundwater is not currently used nor is it planned to be used. However, if it's designated as a class 2A aquifer, it should be evaluated as such; and future ingestion of groundwater should be listed in the bullets, since this is a completed pathway that will need to be considered in the risk assessment.</p> <p>(c) Although the text indicates that during previous Lot-specific investigations, soil remediation activities have been completed and NJDEP institutional and engineering controls have been recorded on some of the Lots, these areas will require further evaluation based on the Superfund Guidance.</p>	
20	WP Section 3.4 (pages 3-2 and 3-3)	<p>Add potential receptor exposure pathways related to site contamination in soil and groundwater that either may have discharged, or is discharging, to the Passaic River, including:</p> <p>(a) a potential exposure pathway for humans who may be recreating along the shoreline (boaters, people fishing, etc.) consisting of dermal contact and incidental ingestion of contaminated surface water, and</p> <p>(b) a potential exposure pathway for benthic organisms that may be exposed to contaminated porewater discharging through surface sediments.</p> <p>In addition, it is recommended that all available Receptor Evaluations (REs) for existing NJDEP SRP cases within the site be reviewed to assist in compiling a comprehensive list of potential receptors and exposure pathways.</p>	
21	WP Section 4.1 (page 4-1)	The text in paragraph 3, last sentence states: "June 2015 observations confirmed that Building #7 tanks and basement no longer contained wastes and are not a current source." The absence of wastes is an observation but the source determination is a conclusion. This statement should be revised accordingly.	
22	WP Section 4.2 General	<p>This section should include better links between prior site findings and planned Phase I work. Although descriptions of prior site operations and information from available environmental investigations are provided, the descriptions of "how/why" this information ties into the proposed work plan, or not, is not provided. For example, for Lot 57, a prior Acetone spill is identified as an "AOC"; however, soil borings to address this area in Table 4 are not identified. In short, this section should be revised to present an improved description of specific, relevant facts per parcel, taken from existing environmental investigation reports as identified below. Therefore, this section should include:</p> <p>a. A list of individual areas of concern per lot. It is necessary to describe what was suspected to have been discharged and what was found in site media to the extent known. This description could include depths of contamination and locations of maximum contaminant concentrations (vertically and horizontally). In addition, it may be helpful identify areas where contaminant delineation had been completed versus AOCs which needed further investigation and why.</p> <p>b. Soil removal or treatment that may have taken place.</p> <p>c. Locations of any observed or suspected DNAPL or LNAPL, and the nature and extent of same (e.g., Tetra Tech EM Inc. Report, 2012, descriptions of test pit observations).</p> <p>d. Locations of all former and existing underground conveyances towards the Passaic River and status of same (i.e., have they been removed, sealed?).</p> <p>e. A description of groundwater quality, to the extent known, in the vicinity of all of the above areas.</p>	
23	WP Section 4.2.3 (page 4-6)	Paragraph 5 states: "The June 2015 Building #15 observations were limited due to access restrictions." Please explain why they were restricted.	

Comment No.	Page and Section Reference	Comment	Response
24	WP Section 4.2.9 (page 4-14)	<p>(a) Paragraph 5 states: “The October 2009 Passaic River “Mystery Oil Spill” case was attributed to ASTs in the basement of Building #12.” Please reword this sentence with the language used in the SCSR, page 3-7 para. 2, which references the NJ Case No. (i.e. “[t]he New Jersey BER investigation report for the case known as the “Passaic River Mystery Oil Spill” (Case #09-10-29-1320-36) was attributed to ASTs in the basement of Building #12.”</p> <p>(b) Paragraph 5 states: “The discharge from the Building #12 sewer pipe resembled the material observed in the Passaic River.” Please clarify here that the discharge from Building #12 resembled the “spill material” observed in the Passaic River.</p> <p>(c) Paragraph 5 states: “Based on its investigation during removal activities, USEPA has expressed the opinion that contents of the two basement tanks appeared to have been intentionally discharged into the sewer (Section V #16 of Order).” Section V #16 of the Order only states that, “EPA traced the source to two basement tanks in a vacant building located on Lot 64 that had recently been connected to a storm sewer by a hose.” Please reword this sentence to reflect the above language in the Order.</p>	
25	WP Section 4.2.15 (page 4-20)	The Work Plan indicates that an unknown quantity of nitrocellulose was spilled on Lot No. 70 in 1993. Is it anticipated that Federal handled any other highly flammable or explosive products? Were health and safety protocols developed for the RI field investigations to address the potential for any munitions and explosives of concern (MEC) to be encountered on-site?	
26	WP Section 4.3 (page 4-22)	Since this is the beginning of the RI/FS process, the investigations should begin by looking at the site as a whole, i.e., evaluate all areas of concern (contaminants and affected media) within one operable unit. Although some investigations and remedial actions have taken place within the site, the nature and extent of contamination and determination of risks need to be determined for the entire site in the absence of controls. Where possible, existing data can be used to inform this site-wide characterization.	
27	WP Section 5 (page 5-1)	<p>(a) This section of the report provides Applicable and Relevant and Appropriate Requirements but does not discuss the development of PRGs needed to demonstrate that the first threshold criteria of protection of human health and the environment has been met. The text needs to clarify when the PRGs will be developed e.g., in the HHRA or in the Feasibility Study and how this information will be used in establishing the remedial goals in the Record of Decision.</p> <p>(b) Sections 5.1 and 5.2 are out of order. Identification of the Remedial Action Objectives (RAOs) should be the first step in establishing potential cleanup goals for different media and receptors.</p>	
28	WP Section 5.2 (page 5-2)	<p>(a) The first paragraph states that: “...data needs and gaps will be identified for the RI which will be used to evaluate remedial technologies in the FS.” It is suggested that this evaluation should be conducted before the Remedial Investigation so that the data can be used to support the evaluation of risks.</p> <p>(b) The Table in this section indicates concentrations in groundwater will be reduced to concentrations established under the risk assessment. Clarify that the concentrations referred to in the statement are Preliminary Remediation Goals. Similarly, the statement regarding risk based discharge concentrations also requires clarification.</p> <p>(c) Two additional goals must be incorporated:</p> <ul style="list-style-type: none"> - Prevent and eliminate discharge of site contaminants to sediment and surface water of the Passaic River and - Abate all site contaminant sources to groundwater, soil, soil gas, surface water and sediment. <p>(To the extent possible, rather than secured on site, chemical wastes should be removed, treated and/or transported off-site for appropriate disposal in facilities licensed to accept the material.)</p>	

Comment No.	Page and Section Reference	Comment	Response
29	WP Sections 5.2 (page 5-2) Table and 8.1.2 (pages 8-1 and 8-2)	Some additional remedial technologies that should be evaluated could include: vertical barrier wall with hydraulic pumping and treatment, permeable reactive barriers, impermeable cap, and solidification.	
30	WP Section 5.2 (page 5-3)	This paragraph states that “As indicated previously, several lots of the Site have existing engineering and institutional controls that have been approved by the NJDEP as being protective of human health and the environment. RAOs and remedial action alternatives will be compared with these pre-existing controls to evaluate their potential incorporation as a remedial alternative.” Typically, the risk assessment establishes risks in the absence of institutional controls and remedial actions. These sites will require a risk assessment to establish the need for remedial action followed by the development of PRGs consistent with the Superfund guidance. The text requires clarification.	
31	WP Section 6.1.4 (page 6-2)	The work plan states that during Phase I activities, an effort will be performed to identify any discharge pipes and seeps during low tide from the wall bordering the river. a. Prior to this, historical site maps/plans must be reviewed to identify the most likely places to observe these features. b. In addition, riverside surveillance using a boat at low tide should be performed, as this will likely improve identifying these areas. c. Consult recently issued NJDEP Guidance for locating and focusing groundwater to surface water discharges for improved sampling design: http://www.state.nj.us/dep/srp/guidance/srra/gw_discharge_to_sw_tech_guidance.pdf d. Phase I sampling should include investigation of these contaminant migration pathways with consideration of sampling in focused areas, based on the conceptual site model, of Passaic River sediment, sediment-pore water and surface water. Historical aerials from 1941, 1954 and 1984 and Sanborn Maps from 1931, 1973 and 1989 would be useful for this purpose. e. Preliminary evaluation/comparison of existing sediment data collected near this site is needed, in relation to main contaminants of concern on site which may have migrated to the river. Samples collected as part the Lower Passaic River Focused Feasibility Study Superfund Site are available at: http://www.ourpassaic.org/ . Sediment samples for comprehensive chemical analysis were taken from several sediment depth intervals in 2008 and 2012; data from other years may also be available. In addition surface grab samples (0-6”) were collected in 2009 and 2010.	
32	WP Section 6.1.4 (page 6-2)	What is the data quality objective for collecting sewer water samples? Isn't there also a need to collect soil samples adjacent to sewer and process drain alignments to investigate for historical exfiltration of waste, given that a number of the buildings are no longer utilized for industrial processes?	
33	WP Section 6.1.4 (page 6-2) and QAPP WS 20 (page 114)	(a) Please clarify where (e.g., behind the overflow weir) and when (during a CSO overflow event or during dry weather) sewer water samples are to be collected. Sewer water samples must be collected at a point in the system that is not influenced by a potential influx of Passaic River surface water entering the outfall. (b) Following the “subsurface piping evaluation”, please populate QAPP WS 20 with the proposed number of sewer samples, number of sampling events, and required analytical parameters.	
34	WP Section 6.1.5 (pages 6-2 and 6-3)	(a) Additional “container inventory and sampling” is planned and identifies Bldgs. #6, 15, and 17 as part of the new study. According to the SCSR and historical information provided regarding ASTs, USTs, and tank farms, additional lots should be investigated along with their surrounding properties. The SCSR mentions Lot 64, former Bldg. #4 as having 9-10 underground storage tanks on site. Please describe whether any further investigation is required for these tanks. (b) Please clarify what type/size of containers would be included as part of the inventory. Are ASTs or USTs included with this activity?	
35	WP Section 6.1.5 (page 6-2) and QAPP WS 20 (page 115)	Following the “container inventory”, please populate QAPP WS 20 with the proposed number of containerized waste samples and the required analytical parameters.	

Comment No.	Page and Section Reference	Comment	Response
36	WP Section 6.1.7 (pages 6-3 and 6-4)	a. Phase I sampling should: delineate areas of presumed contamination (based on historical information) and investigate areas of suspected, previously un-investigated areas. b. Sampling should proceed vertically into saturated zone to delineate areas of concentrated waste or product. c. It is noted that corings B-38, B-59 and B-60 are described as 2-ft composite samples of mounded materials in a former PPG AST containment area. Clarification is needed as to why the depth of sampling will not exceed 2 feet. Otherwise, soil samples beneath the mounds may be needed.	
37	WP Section 6.1.7 (page 6-3), Table 4, and Figure 5	Please provide additional rationale for each proposed soil boring location with reference to historical releases, previously collected data, tank farms, storage locations, USTs, ASTs, etc. by expanding the comments in Table 4. Soil samples should be obtained from beneath buildings where contamination has been documented (e.g., Bldg. #7). These samples should be collected directly through the building slab, if possible.	
38	WP Section 6.1.7 (Page 6-3)	(a) The Work Plan states that borings advanced to investigate the vertical extent of VOC contamination detected by field screening instruments "...will not extend deeper than the base of the silty clay unit..." It is recommended that rather than risk penetrating a potential confining layer, that all soil borings be terminated at the upper bound of the clay unit, where encountered. If it is determined that the clay layer is in fact a continuous confining unit and deeper investigation is warranted, separate borings should be advanced through appropriately installed surface casings to a depth below the base of the clay unit to determine clay thickness, character, and extent and if contamination is present in the aquifer materials underlying the clay unit. Please revise the text accordingly. (b) Will groundwater screening-level samples below the water table be collected and analyzed during installation of the soil boring program?	
39	WP Section 6.1.7 (page 6-3) and Table 5	(a) Please explain why the surface soil sampling interval was selected as "0-2 feet bgs" rather than "0-0.5 feet bgs" and how the surface soil data will be used in the risk assessment. (b) Please clarify if subsurface soil samples will have a maximum or minimum depth interval. (c) The Work Plan states that subsurface soil samples will be collected based on PID measurements, but that boring penetration will be based on VOC concentrations. Please clarify difference in field measurements, and which VOC criterion will be used to decide to continue boring (i.e., does the text infer VOC concentrations > 1ppm will spur sampling at greater depth?). (d) Please populate QAPP WS 20 with estimated number of soil samples. Based on WP Section 6.1.7 and Table 5, the total proposed number of soil samples is 64 borings x 2 samples per boring x 1 event = 128 samples plus 3 additional composites samples, for a total of 131 samples. (e) Please discuss the location of overhead utilities and on-site roadways with regard to the planned boring/well installation plan, specifically the feasibility of safe drilling rig access.	
40	WP Section 6.1.7 (page 6-4)	The composite sampling did not specify how many sampling locations from the surface fill/debris the composite will come from.	
41	WP Sections 6.1.7 (page 6-3) and 6.1.11 (page 6-6)	Based on the contaminants known to be present at/adjacent to the Site and the history of events at the Site, the following contaminants, at a minimum, should be added to the list of COPCs for soils and groundwater: dioxins/furans, PAHs, pesticides, hexavalent chromium and 1,4-dioxane.	
42	WP Section 6.1.8 (page 6-4 and 6-5) and Table 7	(a) Following the "existing well assessment", please populate QAPP WS 20 with the proposed number of groundwater samples, number of sampling rounds, and required analytical parameters. (b) For the existing monitoring well figure on page 6-5 in the WP, please add the designations of monitoring wells E1 through E8, which have been identified in the field.	

Comment No.	Page and Section Reference	Comment	Response
43	WP Section 6.1.8 (page 6-5)	<p>(a) Please re-develop existing wells using well surging techniques prior to sampling them. Some of the existing wells are in strategic locations for acquiring new groundwater data. If some or all of these wells are determined to be unfit for use and decommissioned, EPA should be consulted on the need for replacement. Any wells deemed unusable or in need of repair must be managed in accordance with N.J.A.C. 7:9D. In these instances, the Lot's owner needs to be contacted to facilitate coordination of the repairs/replacements/decommissioning.</p> <p>(b) A description of the additional methods that will be used to locate the existing wells should be included in the WP.</p> <p>(c) Region 2 has a sheet that can be used for existing monitoring well assessments. A copy is attached.</p>	
44	WP Section 6.1.8 (page 6-5)	The WP states that existing wells will be sampled using low-flow methodology and that samples will be taken from the mid-screen interval. In the absence of well construction details, investigators will be hard-pressed to verify the screen length of the existing wells. In addition, NJDEP guidance requires that low-flow samples be taken every 5 feet of saturated screen length. Therefore, multiple samples may have to be taken within site wells if saturated well screens exceed 5 feet. This will apply to existing and proposed wells. Also, need further discussion on sampling procedures for the existing wells.	
45	WP Section 6.1.9 (page 6-6), Table 6, and Figure 6	<p>(a) Please provide additional rationale for each proposed monitoring well installation location with reference to historical releases, previously collected data, etc. by expanding the comments in Table 6. Is it feasible to reallocate some of the four "background" wells located along the northwestern property boundary to address some additional on-site features/potential areas of concern?</p> <p>(b) Two potential data gaps for wells could be on Lot 60, north of Bldg. #1 and on Lot 70, north of Bldg. #16.</p>	
46	WP Section 6.1.9 (page 6-6)	Several well have previously been installed on the property and several other new ones are planned. To avoid confusion that could be caused by starting well names at one again (e.g. MW-1), the previous well names should be considered. For example on Fig. 6, wells E-1 to E-8 are shown. Could the new wells be labeled starting at E-9 or from MW-101?	
47	WP Section 6.1.9 (page 6-6)	It is recommended that a hydrogeological screening program be conducted prior to monitoring well installation. Use of a Membrane Interface Probe with a Hydraulic Profiling Tool and confirmatory grab samples (possibly even with an onsite mobile lab) would help to efficiently characterize stratigraphy, profile contamination, and characterize aquifer hydraulic properties. The tools can be advanced over 50 feet deep and would be worthwhile to investigate, since much more information (compared to the existing data, which is dated and considered 'screening-level' quality) could be gained from such an investigation. While this represents a significant modification of the proposed workplan strategy, a cost-benefit analysis would weigh in favor of the effort.	
48	WP Section 6.1.9 (Page 6-6)	Regarding monitoring well screen placement in the historical fill layer, please ensure that the screen adequately bridges the water table surface such that monitoring of tidal groundwater elevation changes can be accomplished. Monitoring well drilling and construction must be in compliance with N.J.A.C. 7:9D. Additionally, if sampling is to be conducted in accordance with the NJDEP Field Sampling Procedures Manual, note that it requires one groundwater sample for every 5-ft of saturated well screen.	
49	WP Section 6.1.9 (Page 6-6)	To determine whether or not the described clay layer is a confining unit, well couplets consisting of both a well installed in the historical fill and a deeper, appropriately constructed and double-cased well screened above the bedrock or the upper boundary of the next deeper confining layer should be constructed to facilitate comparison of the shallow groundwater elevation/deep groundwater potentiometric surface elevation (throughout a full tidal cycle). Please propose investigation tasks appropriate to determine whether the clay layer is a confining unit and the implications for data needs regarding the quality of the deeper groundwater. The possibility of vertical migration of contamination cannot be ruled out based on the nature and age of site-related contamination; water table wells alone will not adequately characterize the site based on the available data.	

Comment No.	Page and Section Reference	Comment	Response
50	WP Section 6.1.9 (page 6-6)	During monitoring well installation, continuous soil cores should be collected and logged thoroughly, per industry standards (continuous sampling in lieu of SPT techniques).	
51	WP Section 6.1.9 (page 6-6) and WP Section 6.1.11	<p>(a) According to the QAPP and WP Table 7, groundwater will be analyzed for VOCs, SVOCs, metals, and PCBs. Please reconcile Table 7 and the Work Plan Section 6.1.11 text (which excludes PCBs). Co-mingled VOC and PCB contamination can migrate vertically and PCBs should be included in the list of groundwater analytes.</p> <p>(b) Please add pesticide/herbicide analyses to groundwater sample analyses (especially in consideration of the presence of railroad spurs due to typical pesticide application for historical maintenance of rail infrastructure) and dioxin due to proximity to the Passaic River.</p> <p>(c) To be consistent with NJDEP site investigation practices, library searches (TICs) should be added to both VOC and SVOC groundwater sample analyses.</p> <p>(d) Please populate QAPP WS 20 with the proposed number of gauging readings and number of sampling events.</p> <p>(e) Unfiltered groundwater samples are recommended.</p>	
52	WP Section 6.1.10 (page 6-6)	<p>(a) The text does not propose surface water sampling. If that task is included, some shifting of the surface water gauging points could be useful. One point should be at the northern boundary line (Lot 69) and one should be at the southern boundary line (Lot 67). Three points could be equally spaced between them, or could target possible discharge areas if observed.</p> <p>(b) Per the NJDEP's April 3, 2012 "Ground Water Technical Guidance: Site Investigation, Remedial Investigation, Remedial Action Performance Monitoring", if a site is located in an area that is tidally influenced, synoptic ground water and surface water levels should be collected using a pressure transducer recording hourly for a minimum of 24 hours.</p>	
53	WP Section 6.1.11 (pages 6-6 and 6-7)	There are areas onsite where product was previously identified. At those locations, water table groundwater samples and, possibly, product samples should be handled accordingly (note NJDEP's EPH protocol, where applicable).	
54	WP Section 6.1.12 (page 6-7) and Table 8	<p>(a) "Sump sampling" is not discussed in the QAPP or the SOPs. Please include information in the QAPP.</p> <p>(b) There is no reference to a recon survey to identify sumps in all on-site buildings. Please describe actions taken to identify all sumps and process drains in the buildings that merit investigation.</p> <p>(c) According to WP Table 7, groundwater will be analyzed for VOCs, SVOCs, metals, and PCBs. Please reconcile Table 7 and the Work Plan Section 6.1.12 text (which excludes PCBs).</p> <p>(d) Please clarify the total number of proposed groundwater samples in Table 8. The total number of groundwater samples is: (15 new wells + 8 existing wells + 3 sumps) x 1 sample/location x 2 rounds = 52 samples. According to WP Section 6.1.12, sumps will be sampled twice, consistent with the monitoring well sampling.</p>	
55	WP Section 6.1.14 (page 6-8)	After the sentence, "The drilling of soil borings and installation and sampling of monitoring wells are anticipated to generate the following IDW...." a bullet point should be added for dedicated sampling equipment (e.g. Teflon tubing, bailers, etc.) used during low-flow groundwater sampling.	
56	WP Section 6.1.15 (page 6-8)	<p>(a) The screening levels should be set at concentrations of 1×10^{-6} or an HI = 0.1 consistent with screening levels used in other media.</p> <p>(b) In addition to evaluating the need for a VI investigation based on, "...sample location, building occupancy, parameter of potential concern, and facility operations", the potential future use should also be considered.</p> <p>(c) In addition to use of EPA VI Screening Level Calculator, groundwater and soil gas data should be compared to NJDEP VI Screening Levels (as mentioned later in Section 6.2.3), at the links below for easier reference: http://www.state.nj.us/dep/srp/guidance/vaporintrusion/index.html, and http://www.state.nj.us/dep/srp/guidance/vaporintrusion/vig_tables.pdf.</p>	

Comment No.	Page and Section Reference	Comment	Response
57	WP Section 6.1.16 (page 6-8)	Groundwater characterization should measure conductivity changes during a full tidal cycle as part of the evaluation of tidal flushing and the associated area of influence. Hydraulic conductivity testing should include both shallow and deeper monitoring wells (requested via these comments) to provide a full profile of hydraulic conductivity.	
58	WP Section 6.1.17 (page 6-9)	The text needs to clarify the basis for limiting the potential evaluation of groundwater to 1 mile from the site.	
59	WP Sections 6.2 (page 6-9) and 6.2.1 (page 6-10)	Development of Phase 2 must anticipate the need to investigate potential site-related contaminant impacts on sediment and surface water quality of the Passaic River.	
60	WP Section 6.2.2 (page 6-10)	<ul style="list-style-type: none"> (a) The text suggests that MNA for chlorinated VOCs would be evaluated. Note that there are recent advances in testing and evaluation approaches for MNA. Several recent reports should also be referred to when assessing MNA for the site. (b) Also note that several other chemicals are found at the site, including many metals and BTEX. Will the potential for MNA of other chemicals also be evaluated? 	
61	WP Section 6.3.1 (pages 6-11 and 6-12)	<ul style="list-style-type: none"> (a) For the human health risk assessment it will be important to characterize potential Exposure Areas that will be addressed during the risk assessment. This step is important before the Pathways Analysis Report (PAR) is submitted so that the proposed areas to be evaluated can be categorized based on potential receptors. (b) The HHRA will need to consider the Reasonably Maximally Exposed individual and the development of individual exposure areas for evaluation site-wide. The PAR will need to provide specifics based on the available data about Exposure Areas. For example, it is unlikely that one individual will be exposed to all surface soils, exposures may vary depending on the individual parcels. At a minimum, exposures within individual areas will need to be considered in the HHRA. 	
62	WP Section 6.3.1 (page 6-12)	<ul style="list-style-type: none"> (a) In the 1st bullet and 1st paragraph, change the title of the 1st section of the BHHRA to “Hazard Identification and Data Collection and Evaluation” consistent with guidance. (b) Also in the 1st paragraph, the discussion regarding selection of toxicity values should also indicate coordination with EPA’s Superfund Technical Support Center in derivation of potential toxicity values. It is recommended that this process be started early to allow the Center adequate time to develop this information. 	
63	WP Section 6.3.2 (page 6-12)	<ul style="list-style-type: none"> (a) The SLERA section is too generic and should include sediment as a media of interest. (b) It is mentioned that conservative screening values will be used in the SLERA but the values are not included in the WP. It is unclear if the detection limits chosen for the analytical work will be sufficient for the SLERA without presentation of the SLERA screening values that will be used. It is also unclear if each individual lot will be screened and evaluated or if the entire site (maximum value from all samples of a specific media) will be screened and evaluated as a single exposure unit. 	
64	WP Section 7.2.1 (page 7-1)	The text should clarify the review process for inclusion of historical data.	
65	WP Section 7.2.2 (page 7-2)	<ul style="list-style-type: none"> (a) The webpage link needs to be updated to the following link: http://earthsoft.com/products/edp/edp-format-for-epar2/ to download the new format and EDP data checker. (b) Please submit chemistry data in the full MEDD format, including Sample page, Batch page, and Test Result/QC page (not the Basic Chemistry format). 	
66	WP Section 8.1.2 (pages 8-1 and 8-2)	Based on Phase I results, this list may need to be updated to include alternatives to address site-related contamination potentially impacting the Passaic River.	
67	WP Section 8.2 (page 8-2)	The PRGs should also be considered during the Feasibility Study. The text requires further clarification.	

Comment No.	Page and Section Reference	Comment	Response
68	WP Sections 9.3.1 and 9.3.2 (pages 9-1 and 9-2)	These sections need to acknowledge the development of PRGs and also the analysis of background concentrations.	
69	WP Section 9.3.3 (page 9-2)	It should be noted that if no BERA is required, the final SLERA will be incorporated into the RI Report.	
70	WP Section 9.7 (page 9-4)	The text needs to clarify whether the PRGs will also be developed and included in this evaluation.	
71	WP Section 10.1 (page 10-1)	The text in the last paragraph should note, in addition to the current laboratory certifications, the laboratory SOPs as specified in the project's analytical requirements should also be submitted.	
72	WP Section 11.2 (page 11-2)	Monthly progress reports should also be provided to NJDEP.	
73	Table 2	Include reference to PRGs here and remove reference to the 2010 Regional Screening Levels since this document is out of date. Further, remove reference to the Soil Screening Level Guidance, EPA's Health Effects Assessment and NAS Cancer Assessment Group Guidance since they are not considered in the development of PRGs. These documents are not considered TBCs nor serve as the basis for calculating PRGs. NAS is also not a federal agency and should not be included.	
74	Tables 4 and 5	For each soil coring, additional information is needed: to either describe the existing, available information per coring (nearby soil contaminant concentrations, including depths), or to state that proposed coring(s) represent the first soil investigation for the area of interest. This information is important for reference. Although a site-wide characterization is needed, the findings of site studies performed to date, may help inform this next phase of field work, such that Phase 1 could: a. Target known areas of concern for delineation purposes (i.e., existing contaminant conditions suspected of posing ongoing discharge to groundwater or surface water, such as concentrated wastes or product, for development of appropriate potential remedial options), and b. Sample areas of concern not previously investigated.	
75	Table 5	It would be helpful to indicate the basis for determining soil sample depth. For example, utility workers would dig to a specific depth to repair utilities; construction workers would dig to a specific depth to build a basement; and depths for outdoor workers (e.g., grounds keeper).	
76	Table 5	a. Rather than collection of 2-ft. composite soil samples, samples taken from discrete intervals of 0-6 inches, at targeted depths, should be considered. b. Consult the NJDEP's Technical Guidance for Site Investigation of Soil, Remedial Investigation of Soil and Remedial Action Verification Sampling for Soil, March 2015, Version 1.2. In particular, refer to Section 3.3 for Field Sampling Approach, especially for surface and subsurface soil samples. For this information, please refer to http://www.state.nj.us/dep/srp/guidance/srra/soil_inv_si_ri_ra.pdf .	
77	Figures 2 and 4	(a) Please fix the typo in the table – "CECLOR ASSOC" should be "CELCOR ASSOC". (b) Please add Building 15A to Lot 58 in the table. (c) Please add Building 19 to Lot 69 in the table.	
78	Figure 8	The presented schedule needs to be revised. In accordance with Appendix A, Section III.A of the Order, "The schedule shall provide for the completion of the RI/FS within twenty-four (24) months after EPA approval of the RI/FS Work Plan, or as otherwise modified by EPA."	
79	QAPP General	The QAPP contains a number of incomplete worksheets; consequently, the proposed number of field samples, sampling locations, and proposed analytical parameters (by media) are unclear. Please remove cross-references from the QAPP that state "See RI Work Plan", and replace with specific information on the number, type, and location of field samples and planned analyses.	
80	QAPP General	Based on the contaminants known to be present at/adjacent to the Site and the history of events at the Site, the following contaminants, at a minimum, should be added to the list of COPCs for soils and groundwater: dioxins/furans, PAHs, hexavalent chromium and 1,4-dioxane.	

Comment No.	Page and Section Reference	Comment	Response
81	QAPP WS 2 (page 5)	(a) Please note that items #5 and 6 were missing from the left margin of the worksheet; please repair the worksheet's formatting. Since no previous Work Plans or QAPPs have been developed for this site, please complete WS 2 Item 6 by entering "None." (b) If no worksheets are excluded from the QAPP (Version 0), please complete WS 2 Item 9 by entering "None," rather than leaving the item blank.	
82	QAPP WS 3 (page 11)	(a) Please insert the contact information for the NJDEP Case Manager. (b) Please include contact information for the Site Health and Safety Officer George Franklin (designated in WS 6).	
83	QAPP WS 5 (page 13) and WS 34 (page 165)	Please expand the WS 5 Organizational Chart by adding a box for the data validator. Please also revise WS 34 (page 165), which indicates that the project data validator is yet to be determined. Based on WS 4 and WS 6, the data validator for this project will be David Dinsmore of Woodard and Curran.	
84	QAPP WS 6 (pages 14 and 15)	(a) Please include a communication pathway to report daily field work progress to EPA or modify the first item on the worksheet ("Communication with EPA") to explicitly include daily field reports via e-mail. (b) Please include EPA in the communication pathway for reporting Field Corrective Action(s).	
85	QAPP WS 6 (page 15)	Please clarify how the field corrective actions will be documented for activities that will be implemented without a QAPP amendment.	
86	WAPP WS 9 (page 20)	Please fill in the projected sampling dates, phone #'s and email addresses.	
87	QAPP WS 10, Section 10.1 (page 22)	Please provide a figure with groundwater elevations and groundwater flow patterns to support the summary that groundwater flows south-southeast on the Site.	
88	QAPP WS 10, Section 10.1 (page 22)	Please provide a reference to the previous site investigations in WS 10 and provide a full bibliography of secondary data sources that report the results of these investigations in WS 13. Please include a reference to the SCSR or provide a table of the historical data as an appendix and highlight concentrations (and corresponding locations) that exceeded the EPA Regional Screening Levels (soil) and Maximum Contaminant Levels (groundwater).	
89	QAPP WS 10, Section 10.1 (page 22)	The text indicates that industrial Regional Screening Levels were used to remove dioxins/furans from further consideration. This determination is made in the HHRA by comparing chemicals to residential screening levels. The Regional Screening Levels are also used in the determination of the MDLs. This approach will require further discussion.	
90	QAPP WS 10, Section 10.1 (pages 22-23)	(a) The proposed contaminant transport pathways should be expanded for clarity. It appears that the stormwater pathway is intended to refer to storm runoff from site soils, since the sewer lines carry both wastewater and stormwater (WP Section 3.3). If so, revise "storm water" to "storm runoff to surface water". (b) Also, add porewater discharge to the Passaic River as a potential transport pathway.	
91	QAPP WS 10, Section 10.2 (page 23)	Please revise the text to read "...data gathering to determine the nature and extent <u>of soil and groundwater contamination and the magnitude</u> of risk to human health <u>and</u> the environment..."	
92	QAPP WS 10, Section 10.3 (page 23)	(a) For second bullet, remove the phrase: "...if present". (b) Suggest changing the third question to: "Are there any current/potential exposures to the RME individual that may exceed the NCP risk range or the goal of protection of a Hazard Index = 1?" This change may also need to be made in other sections where this type of decision criteria is provided. (c) Also, add another bullet: "Are there any ongoing releases to groundwater, surface water, soil and sediment?"	

Comment No.	Page and Section Reference	Comment	Response
93	QAPP WS 10, Section 10.3 (page 23)	<p>The list of environmental questions should be expanded to address each element of the proposed investigation. The following additional questions are recommended as examples; please expand the list as appropriate to fully address the comment.</p> <ul style="list-style-type: none"> • What is the horizontal and vertical extent of historical fill on the site? • Where are subsurface utilities (process drains and sewers, storm sewers, other utilities and associated bedding) located at the site? • What is the complete inventory of containers, ASTs, and USTs at the site? • What is the concentration of contaminants in liquids present in sumps in the basements of Buildings #2 and 17? • What is the nature and extent of soil contamination in the vadose zone at the site? • What is the concentration of COPCs in shallow (and deep?) groundwater at the site? • Is the clay layer below the historical fill at the site acting as a confining unit? • What is the character, thickness, orientation, lateral extent of the reported clay confining unit? • How do groundwater and Passaic River surface water elevations vary over a complete tidal cycle? • What is the groundwater flow direction at the site over a complete tidal cycle? • What is the hydraulic conductivity of the aquifer beneath the site? What are the impacts of tidal flushing on site groundwater conditions and contaminant fate and transport? Is contaminated groundwater discharging to the Passaic River as sediment porewater? • What and where are the suspected sources of detected soil and groundwater contamination? • What are the risks to human and ecological health due to the detected contamination? 	
94	QAPP WS 10, Section 10.4 (page 23)	It is understood that at least an initial level of site reconnaissance was performed prior to development of this WP. Observations from those efforts should be included here.	
95	QAPP WS 10, Section 10.5 (page 24)	Include at least a brief summary of the secondary data or information from site reports here.	
96	QAPP WS 10, Section 10.6 Table (page 24), WS 11 (page 31), and WS 14 (page 62)	<p>(a) Throughout the QAPP, use of the term “waste” requires additional clarification to distinguish between the “containerized waste samples” and “investigation-derived waste (IDW) characterization samples.” Please clarify terminology and discuss both sample types consistently.</p> <p>(b) Per WP Section 6.1.5 and WS 11 “Type of Data that are Needed” (page 30), please add “containerized waste” and also IDW as media to be sampled in the WS 10.6 Table.</p> <p>(c) WS 14 states that waste characterization samples will be collected from ASTs and USTs. Based on WS 11, waste will be analyzed for TCLP Toxicity and other RCRA characteristics. Please provide the full parameter list for containerized waste samples and confirm that disposal facilities under consideration do not require PCBs and/or other parameters in addition to the RCRA characteristic analyses. Information regarding IDW sampling should be added to WS 14.</p>	
97	QAPP WS 10, Section 10.7 “Soil” (page 24)	<p>(a) EPA relies on residential screening levels to identify Chemicals of Potential Concern in the HHRA. Further discussion regarding the use of industrial RSLs is needed since this approach may exclude chemicals at the residential RSL and does not address potential additivity of chemicals.</p> <p>(b) The specific rationale for each soil sample (location on site and soil interval) must be described in the context of existing data and site conditions, and describe the specific data gap it is intended to fill. This will enable Phase I field activities to be more productive.</p>	

Comment No.	Page and Section Reference	Comment	Response
98	QAPP WS 10.7 "Air" (page 25) and WP Section 6.1.15 (page 6-8)	<p>(a) Please clarify/reconcile the decision points for vapor intrusion sampling on WS 10.7. WS 14 (page 62) indicates that groundwater data will be used to assess the potential for vapor intrusion into buildings; however, QAPP Section 10.7 and WP Section 6.1.15 indicate that both groundwater and soil data will be used as decision bases. Please use consistent terminology in Section 10.7 and throughout the QAPP for this task; e.g., Vapor Intrusion Sampling for the task and soil vapor for the medium to be sampled; WS 14 refers to "Air Sampling" and the sampling medium/task is often designated simply as "air". What are the action criteria in soil and groundwater to be used to trigger investigation?</p> <p>(b) Releases from USTs, sumps, process drains, sewers, and building basements used for waste storage and/or disposal may have generated VOC soil concentrations underneath buildings that exceed VOC soil concentrations between buildings. Please provide a rationale and decision process pertaining to the need to collect soil samples beneath building slabs. For example, please discuss the need for additional soil sampling beneath the slabs of Buildings #7 and 12 (currently no sampling proposed beneath Building #12) and in the roadway between the two buildings (would this be feasible, given that it appears that there may be little or no traffic to the southern end of the site due to lack of active facilities?).</p>	
99	QAPP WS 10, Section 10.8 (pages 25 and 26)	<p>(a) The second bullet regarding unacceptable risk should be changed to "...determine if there any current/potential exposures to the RME individual that may exceed the NCP risk range or the goal of protection of a Hazard Index = 1."</p> <p>(b) The discussion of Vapor Intrusion should indicate whether samples will be collected subslab or indoor. Typically, Region 2 requires collection of both samples.</p>	
100	QAPP WS 11 (page 27)	In addition to the internal QA/QC procedures from the project laboratory as stated in the bullets, the laboratory's analytical SOPs for the proposed analyses should also be provided.	
101	QAPP WS 11 "Intended Use of the Data" (page 28)	Revision of the listed remedial investigation objectives is necessary. The third bullet should be revised to: "provide sufficient information to evaluate prospective remedial action alternatives in the feasibility study for the purpose of remediating unacceptable risks/hazards to both human health and ecological receptors". An additional bullet should be added to state: "characterize any ongoing releases of site contaminants." (These activities may include evaluation of existing institutional and engineering controls, but should not be limited to this.)	
102	QAPP WS 11 "Intended Use of the Data" (page 28)	Please clarify what "screening data" will be collected to evaluate the extent of contamination, e.g., 'jar headspace PID measurements from each soil interval sampled.' WS 11 "Screening Objectives" (page 29) provides a definition for screening data but does not clearly state the type, number, or frequency of measurements to be recorded. Note that WS 11 "Type of Data..." (page 30) also lists screening level field measurements, but this list does not match the screening objectives on page 29. Please revise the document so that screening data descriptions/scope are consistent and remove examples such as "soil gas surveys" that are not pertinent to the proposed work.	
103	QAPP WS 11 "Data Use Data Quality Objectives" (page 28)	Add a checked box and text as follows: "Support the development of the human health risk assessment"	
104	QAPP WS 11 "Quality of the Data Required" (page 31)	If tentatively-identified compounds (TICs) will be reported by the laboratory, please explain how these data will be managed. It is recommended that the laboratory include the relative retention time in the electronic data deliverable, so that recurring TIC peaks can be identified, if detected.	
105	QAPP WS 11 "Quality of the Data Required" (page 31)	The text states that "the sensitivity of the analytical methods must be sufficient to satisfy the Project Action Limits (PALs), as listed in Worksheet #15 of this QAPP. The PALs were chosen based on risk-based screening criteria provided by USEPA Region III regional screening levels (RSLs) (updated June 2015, rev. 1), USEPA MCLs, and EPA Vapor Intrusion Screening Levels (VISLs)." This text should be revised to indicate that the Regional Screening Levels are based on residential exposures to support the selection of Chemicals of Potential Concern.	

Comment No.	Page and Section Reference	Comment	Response
106	QAPP WS 11 "Quality of the Data Required" (page 31) and WS 15	Please confirm that laboratory quantitation limits (i.e., lowest calibration point) will not exceed the Project Action Limits. WS 11 states "...sensitivity of analytical methods must be sufficient to satisfy the Project Action Limits..." Please confirm whether this requirement will be addressed in the submittal of the Lab QAPP Addendum, prior to field work.	
107	QAPP WS 11 "Data Reporting" (page 32) and WS 14 "Data Management" (page 63)	Please confirm that information in WS 11 on "data reporting" is consistent with WS 14 "data management," and add pertinent information from WP Section 7.2 into the QAPP. The discussion on data management in WS 14 should be revised to include a reference to WS 11. WS 11, "Where, When and How..." should include references to the proposed sample location figures included in the WP.	
108	QAPP WS 12 and WS 28 General	QAPP WS 12 contains the following note for all entries of Measurement Performance Criteria: "Criteria in EPA Region 2 Validation SOP." Please revise WS 12 to present laboratory SOP measurement performance criteria, since the laboratory will qualify data and implement corrective action according to their internal SOPs, not EPA data validation guidelines. Specifically, for WS 12.1, 12.2 and 12.3, be sure to clarify the measurement performance criteria that will be used for the MS/MSD results and field duplicates, since the Region 2 Validation SOP does not have any criteria for evaluating MS/MSD results and only provides a guidance value of <50% RPD for field duplicates. WS 28 cross-references WS 12 for measurement performance criteria, so please make similar corrections there.	
109	QAPP WS 12/28 and WS 24 General	Following UFP-QAPP format, please move information pertaining to calibration (listed in WS 12 and WS 28) to WS 24, which was incomplete in the document submitted for review. On WS 24, please include calibration criteria from laboratory SOPs, since the laboratory will qualify data and implement corrective action according to their internal SOPs, not EPA data validation guidelines.	
110	QAPP WS 12 and WS 36 General	In accordance with the UFP-QAPP format, please move footnoted information on validation from WS 12 to WS 36.	
111	QAPP WS 12 Sections 12.4 & 12.5 (pages 44 to 47)	The measurement performance criteria: "For Solids: %Solids \geq 50%" as provided in WS 12.6 and 12.7 should also be included in these worksheets.	
112	QAPP WS 12 Sections 12.1 - 12.3 (pages 38 to 42)	The data quality indicator for the DMCs and Surrogates should be accuracy rather than sensitivity. These results are typically used to assist in the evaluation of any bias during sample preparation and analysis.	
113	QAPP WS 15	For the Achievable Laboratory Limits, the Regional Screening Levels may need to be updated to reflect any changes to the values which are updated on a semi-annual basis. The tables also require updates to include the proposed MDLs.	
114	QAPP WS 15 "Thallium"	Due to the low risk-based screening levels for thallium, especially in groundwater, it may be appropriate to consider a furnace atomic absorption analytical method to achieve the necessary MDL, and therefore reduce the potential for false negatives.	
115	QAPP WS 15 "PCB" (pages 86 and 96)	Please include Aroclor 1262 and Aroclor 1268 on the groundwater and sewer sample PCB parameter lists, since these Aroclors are part of the Target Compound List of SOM02.2 (they are also included on the soil sample table on page 76 of the QAPP).	
116	QAPP WS 16 (page 106)	(a) The Risk Assessments are submitted with the RI Report not the FS Report. (b) The anticipated initiation, completion and deliverable due dates should be included here. (c) The SCSR Addendum is due after completion of all data collection activities. Therefore, if a Phase 2 effort is needed, it should follow that.	
117	QAPP WS 17 (pages 107 and 108)	This WS should include the specific information on the details of the sampling design and rationale with appropriate references to other relevant tables and figures of the WP, such as Table 4, Phase I Soil Sampling Locations and Figure 5, Proposed Boring Location Map. In addition, although this WS states that information similar to WS 18 will be included in the WP, since the QAPP is functionally equivalent to a field sampling plan, the information required in WS 18 needs to be completed.	

Comment No.	Page and Section Reference	Comment	Response
118	QAPP WS 18 (page 110)	See above comment.	
119	QAPP WS 20 (page 113) and SOP S-16 "QA/QC" (page 2)	(a) Please identify the differences between "field blanks" and "equipment blanks" on QAPP WS 20. Will field blanks be only opened and exposed to ambient air in the field, as opposed to equipment (i.e., equipment rinsate) blanks? (b) Please document how the "field blank" and "equipment blank" will be collected in SOP S-16 (and the different techniques for these two samples).	
120	QAPP WS 20 (page 114)	Please provide the number of sampling location of samples to the lab in this WS.	
121	QAPP WS 21	The SOPs provided did not include a field SOP that will be used when collecting sewer water samples. Add this in.	
122	QAPP WS 21 (page 116)	For SOP S-3, it is unclear what the modifications are to this SOP. Provide a summary of the modifications under the comments column of the WS.	
123	QAPP WS 22 (page 122)	(a) WS 22 does not include all of the field equipment that is documented in the field SOPs, such as a water level meter (SOP S-17), a turbidimeter (SOP S-13), pumps (SOP S-9), and a product interface meter (SOP S-8). Please review field SOPs and ensure that all items of field equipment are listed in WS 22. (b) Please include calibration requirements and corrective actions listed in SOP 10 through SOP 15 (for water quality meter calibration) in QAPP WS 22.	
124	QAPP WS 23 (page 123)	Complete this WS upon completion of laboratory procurement.	
125	QAPP WS 24 (page 124)	See above comment.	
126	QAPP WS 25 (page 125)	See above comment.	
127	QAPP WS 27 General comment on nomenclature	Please include a date in the sample ID for groundwater samples from monitoring wells, air, and soil gas. As presented in the QAPP, monitoring well samples are listed only by well identification (such as MW-101; refer to page 130). If a given monitoring well is sampled multiple times, the sample ID MW-101 will appear in the electronic database multiple times (which can be misinterpreted as duplicate records). A sample ID with a date incorporated will quickly alert the data user that the well was sampled multiple times and allow for rapid determination of the sampling date.	
128	QAPP WS 28 Sections 28.1 – 28.3 (pages 137 to 143)	These WSs reference WS 12 for the measurement performance criteria for MS/MSD. However, as noted in the comment on WS 12, the Region 2 data Validation SOP for organic analyses does not specify any specific criteria for MS/MSD. Please clarify in WS 28 the criteria that will be used for evaluating the results from MS/MSD samples.	
129	QAPP WS 31 (page 160)	WS 31 indicates that a "Field Sampling Technical Assessment Audit" will occur once the RI field program begins. However, WS 14 (page 67) states that "Field audits may be conducted at the discretion of the... Project QA Coordinator." Please clarify discrepancy/reconcile the worksheets.	
130	QAPP WS 32 (page 161)	Please include EPA as a recipient of the audit report.	
131	QAPP WS 33 (page 162)	Please include EPA as a recipient of the data validation report and validated database (electronic).	
132	QAPP WS 35 (page 166) and WS 14 (page 65)	Please clarify the apparent discrepancy in validation criteria between WS 35 and WS 14. Field samples (soil, groundwater, and vapor intrusion) are expected to have a Level 4 validation, as stated in WS 14. However, WS 35 includes a generic statement that "The level of data validation will depend upon project DQOs." Please remove the generic statement from WS 35 (paragraph immediately above "Stage 1" description) and defer to WS 14.	

Comment No.	Page and Section Reference	Comment	Response
133	QAPP WS 36 (page 171) and WS 14 (page 65) and WP Section 6.1.13 (page 6-7)	Please clarify the apparent discrepancy in validation criteria between WS 36 and WS 14. Waste samples are expected to have a Level 3 validation, as stated in WS 14. However, WS 36 indicates that validation will be a Level 2A. Note that Work Plan Section 6.1.13 states that “waste” (reader is unclear if “waste” refers to container inventory samples or IDW waste samples) will have a Level 2A validation.	
134	SOP S-1 “Surficial Soil Sampling Procedure” (page 1, Steps 3 and 5)	SOP S-1 is not site-specific as written. Please clarify if surface soil collection via techniques described in Step 3 (appears to represent hand sampling) will be conducted at the Site. According to Work Plan Section 6.1.7, surface soils will be collected with a drill rig and represent a 0-2 feet interval; however, there are also references to direct push techniques in the description of IDW that may be generated. Also, please clarify if field samples will be processed at the laboratory or in the field (Step 5).	
135	SOPs S-1 and S-6 General	Please identify the drilling method(s) proposed to advance soil borings (except for borings B-38, B-59 and B-60, which Section 6.1.7 indicates will be advanced using hand augers). It appears from Section 6.1.9 that hollow stem auger drilling methods will be used for monitoring well installation; please confirm whether that method will also be used for soil sampling.	
136	SOP S-3 “Calibration check” (page 2) and QAPP WS 22 (page 122)	(a) Please reconcile the calibration frequency of the PID meter in SOP S-3 and QAPP WS 22; SOP S-3 is not specific enough. QAPP WS22 states that calibration will occur “during” the field day and at the end of each day. (Note that SOP S-7 states that the PID will be calibrated at the beginning and end of each day.) Please make calibration frequencies consistent; it is preferred that all instruments be calibrated prior to starting work each day, with a calibration check at a minimum at the end of the day, with calibration and verification activities documented in the field notes. (b) Please include SOP S-3’s “Calibration Check” information and corrective actions in QAPP WS 22.	
137	SOP S-9 “Calibration Check” (page 7) and QAPP WS 22 (page 122)	Please copy SOP S-9’s “Calibration Check” instructions and corrective actions to QAPP WS 22.	
138	SOP S-16 “Heavy Equipment Procedure” (page 1)	Please clarify whether rinse water from decontamination of heavy equipment will be containerized. Step 5 is not site-specific and refers to the “material management plan or HASP.”	
139	SOP S-16 “Sampling Equipment Procedure” (page 2)	(a) Please revise the section on decontamination of sampling equipment to be consistent with the NJDEP Field Sampling Procedures Manual’s recommendations. “Pump Procedure” (Step 2 of the SOP) and electronics should be rinsed/flushed with distilled water (Type II). The SOP text seems to suggest that pumps may be flushed with organic solvent. User manuals for pumps and electronics should be referenced before rinsing with organic solvent. (b) Please evaluate whether methanol or acetone may be used in the decontamination process. Per NJDEP 2005 Field Sampling Procedures Manual (Section 2.4.1 of guidance), methanol cannot be used when sampling gasoline and its by-products. Similarly, acetone is a site contaminant on Lot 57. If neither solvent can be used, the NJDEP guidance recommends a 100 degrees C pressure wash.	
140	SOP S-17 “Hydraulic Conductivity Testing”	Per this SOP, transducers should be used for the aquifer testing. Up to three tests per well are expected, per industry practice.	
141	SOP General and QAPP WS 29	Please create a SOP for field documentation and include field forms currently listed in Appendix B “Examples of Field Forms and Log Sheets”. This new SOP should document when each form is to be completed and the associated communication pathway(s). Documentation of the field forms should also be included in QAPP WS 29.	

EPA Region 2 Superfund Well Assessment Checklist

Facility Information

EPA Site ID Number: _____
 Site Name: _____
 EPA Project Manager (contact name): _____
 Site Address Line 1: _____
 Site Address Line 2: _____
 City: _____
 County: _____
 State: _____
 Zip Code: _____
 Site Owner: _____

Well Locational Information

State Well ID Number: _____
 Local Well Name (Well Tag ID): _____

	By Field GPS
Latitude, in decimal degrees	
Longitude, in decimal degrees	

GPS Instrument used: _____
 Datum: _____
 Accuracy/Precision: _____
 Cross streets (if applicable): _____

Well Construction Details

Type of well (Circle one)	Flush Mount	Stick up	Multilevel Well*
---------------------------	-------------	----------	------------------

Height/Depth of well inner casing above/below ground surface, in feet: _____

Well inner casing material: _____

Well inner casing diameter: _____ inches

Well Depth: _____ as measured, in feet below top of casing

Protective outer surface casing material: _____

Protective outer surface casing diameter: _____ inches

Depth to water: _____ feet below measuring point (usually top of inner casing)

Date: _____ Time: _____

Elevation of Measuring Point, as surveyed (usually top of inner casing) _____

Elevation Datum NGVD29 or NAVD88

** If multilevel well please see attached worksheet.

EPA Region 2 Superfund Well Assessment Checklist

Well Headspace Readings

PID/FID Reading taken inside top of casing: _____ ppm

Multi-gas/CGI meter Readings taken:

LEL: _____ % LEL
 O₂: _____ 40% Vol.
 CO: _____ ppm
 H₂S: _____ ppm

Do readings indicate unsafe conditions exist? Yes No

Well Condition

Is the concrete pad in good condition?	Yes	No
Is there any evidence of soil erosion or settling?	Yes	No
Is the well surface casing in good condition?	Yes	No
Is the protective outer surface casing vertical and in good condition?	Yes	No
Is the inner cap or well seal in place?	Yes	No
Has there been physical damage to the well?	Yes	No
Is measuring point marked?	Yes	No
Is the well clearly labeled?	Yes	No
Is the well lock functional?	Yes	No

Type of lock and key number: _____

Flush mount - Are bolts and gasket in good condition?	Yes	No
Flush mount - Any evidence of ponded water?	Yes	No
Is the well currently used for water-level measurements?	Yes	No
Is the well currently used for water-quality sampling?	Yes	No

Other Comments _____

Recommendations

Does the well require any of the following actions? (Check all that apply)

Well needs to be redeveloped	_____
Well needs to be re-surveyed.	_____
Well needs to be repaired.	_____
Well needs to be replaced.	_____
Well needs new lock or security device.	_____
Well needs to be properly decommissioned.	_____

Comments

Inspected by: _____
Date of Inspection: _____
Reviewed by: _____ **(Print)**

EPA Region 2 Superfund Well Assessment Checklist

(Sign)